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NOTICES OF SOME UNDESCRIBED INFUSORIA, FROM THE INFUSORIAL FAUNA OF LOUISIANA.

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FAMILY PARAMONADIDÆ, Kent.

GENUS PETALOMONAS, Stien.

Petalomonas involutus. Sp. n. Plate I., Fig. 1.

Body discoidal with the lateral borders equally involute, both extremities rounded, very much flattened, less than one and a half times as long as wide; flagellum as long as the body and vibratile at its distal end only; oral aperture indistinct; contractile vesicle conspicuous and in the anterior body-third to the left of the median line; nucleus round and sub-central; endoplasm exceedingly transparent and the posterior half usually coarsely granular; movements slow and even; reproduction by longitudinal fission.

Length, 1-1833-inch; habitat, pond water.

FAMILY ASTASIADÆ, Kent.

GENUS ASTASIA, Ehrenberg.

Astasia invaginata. Sp. n. Plate I., Figs. 2, 3 and 4.

Body elongate, cylindrical, highly metabolic, from ten to fifteen times longer than wide, both extremities attenuate, the posterior roundly pointed, the anterior sharply pointed and giving origin to a heavy cord-like flagellum, which is exceedingly active and equaling in length three-fourths of the body length; oral aperture apical, no distinct pharyngeal

passage ; contractile vesicle small and located a short distance behind the apex ; nucleus obscure ; endoplasm transparent and containing a large number of bluish-colored corpuscles, which keep moving incessantly from one extremity to the other in unison with the peristaltic movements of the body ; movements natatory and repent.

Length, 1-275-inch ; habitat, ditch water.

The corpuscles contained in the endoplasm and their movements, as well as the peristaltic and repent movements of the body, impart to this infusorian a striking resemblance to the *Distigma proteus*, Ehrenberg. The sharply pointed anterior extremity, the cord-like flagellum and its origin, have their counterparts in that peculiar-flagellate infusorian which inhabits the intestine of our common house-fly, the *Herpetomonas muscæ-domesticæ*, Burnett.

There is a peculiarity exhibited by this form, which, so far as the writer is acquainted, is unlike anything shown by any other infusorian ; that is the invagination of the anterior portion of its body. During its repent phase the body becomes much contorted and inflated anteriorly, and when these contortions cease (lasting only a short while), the anterior of the body is invaginated and presents a cup-like appearance, with the apex extending vertically from the bottom and the flagellum actively lashing about ; from the posterior of this cup-like arrangement, all that portion of the body not included in this invagination, extends as a pedicle, and becomes attached to the slide or to adjacent débris ; this cup-like portion then remains comparatively quiet, while the flagellum is moved about very actively, or it may sway to and fro, or it may revolve ; when this last-mentioned antic is in operation, the infusorian invariably breaks loose from its attachment and is carried about for a short while in an eccentric manner by the activity of the flagellum, when it again resumes its natatory form.

It seems to have a fondness for débris heaps, as it will remain partially obscured in one of these heaps for a long

time and thus call into play the patience of the observer. It also seems to be rare, the writer not having seen it more than six times in the last four years.

FAMILY ANISONEMIDÆ, Kent.

GENUS HETERONEMA, Dujardin.

Heteronema lunaris. Sp. n. Plate I., Fig. 5.

Body sublunate, compressed, highly metabolic, twice as long as widest part, both extremities sharply pointed, dextral border convex, sinistral border concave and ventricose centrally; flagella originating at the anterior extremity, the anterior one equaling near one and a half body lengths, while the trailing one equals one body length; oral aperture apical, followed by a distinct pharynx, which continues backwards, medianly, through about one-fourth of the body-length and there meets a round and conspicuous contractile vesicle; nucleus ovate and located obliquely in the posterior body-fourth; endoplasm transparent and usually containing fairly large granules of food; movements slow and equable.

Length, 1-700-inch; habitat, pond water.

FAMILY PARAMÆCIIDÆ, Kent.

GENUS LOXOCEPHALUS, Eberhard.

Loxocephalus lucidus. Sp. n. Plate I., Fig. 6.

Body subelliptical, cylindrical, persistent in shape, less than three times as long as wide, posterior rounded, anterior slightly truncate obliquely and flexed towards the ventral surface; oral aperture round, located in the concavity produced by the anterior flexure, and continued obliquely downwards for a short distance in a distinct pharyngeal passage; oral cilia fine and very active; body clothed with fairly long cilia, which are stiff and inactive while the infusorian is feeding; no adcurved setæ as in *Loxocephalus granulatus*, Kent. A single long hair-like seta projecting from the posterior

border; contractile vesicle round, conspicuous, and located in the center of, and almost in contact with the ventral surface; nucleus roundish and subcentral; anal aperture in the posterior fourth of the ventral surface; endoplasm more or less filled with large granules of a dark color; reproduction by transverse fission; conjugation by the application of the oral apertures; movements rotary.

Length, 1-500- to 1-275-inch; habitat, pond water.

In shape and endoplasmic contents this form resembles very much the *Loxocephalus granulosus* of Kent. The distinct oral aperture and pharynx, as well as the position of the contractile vesicle and general average larger size, will serve to identify this new form. From the *Dexiotricha plagia* of Stokes, it can be recognised by the absence of the setose adoral cilia and trichocysts.

In its habits it is not unlike the *Loxocephalus granulosus*.

The very apparent oral aperture and pharynx as distinguished from the obscure oral aperture of the *Loxocephalus granulosus*, has suggested its specific name.

FAMILY PRORODONTIDÆ, Kent.

GENUS NASSULA, Ehrenberg.

Nassula magna. Sp. n. Plate I., Fig. 7.

Body obovate, cylindrical, soft and flexible, less than twice as long as wide, and finely ciliated; pharyngeal rod—fascicle forming an even, undilated tube, located in the center of the anterior body half; contractile vesicle large, round and situated in the center of the posterior body-half on a line with the oral aperture; nucleus round and subcentral; trichocysts very abundant and conspicuous; color yellowish-brown; movements rotary; reproduction by transverse fission.

Length, 1-150- to 1-120-inch; habitat, pond water with algæ.

FAMILY PRORODONTIDÆ, Kent.

GENUS HOLOPHRYA, Ehrenberg.

Holophrya curvilata. Sp. n. Plate I., Fig. 8.

Body ovate, cylindrical, soft and changeable in shape, less than twice as long as wide, posterior rounded, anterior transversely truncated and including the simple oral aperture; body clothed in longitudinal rows, with fine vibratile cilia; body and oral cilia not diverse; contractile vesicle large, round and postero-terminal; nucleus ribbon-shaped, convolute and subcentral; endoplasm yellowish and granular; movements rotary; reproduction by transverse fission.

Length, 1-160-inch; habitat, ditch water with algæ.

FAMILY TRACHELOPHYLLIDÆ, Kent.

GENUS UROTRICHA, Clap. and Lach.

Urotricha hyalina. Sp. n. Plate I., Fig. 9.

Body oblong, cylindrical, from two to two and a half times longer than wide, elastic and persistent in shape, posterior border rounded, anterior border transversely truncate and including oral aperture; body covered with fairly long and active cilia; cuticular surface smooth; a single long hair-like seta projecting from the posterior border; contractile vesicle conspicuous and located in the posterior body-fourth; nucleus round and in posterior body-half; endoplasm very transparent and always containing large food balls of a bluish-green color; anal aperture at the posterior border; reproduction by transverse fission; movements rotary.

Length, 1-750- to 1-450-inch; habitat, pond water.

This form is quite abundant at times and always contains the above-mentioned bluish-green balls, which resemble somewhat the endochrome of the *Oscillaria*. The writer has attempted a number of times to determine whether or not this infusorian feeds specially on this class of algæ, but without satisfactory results. The hair-like caudal seta is unlike

that possessed by the *Urotricha lagenula* of Ehrenberg, and the *Urotricha platystoma* of Stokes, as it does not seem to possess the power of springing the infusorian as is recorded of the caudal setæ of the two forms mentioned.

FAMILY ENCHELYIDÆ, Kent.

GENUS TILLINA, Gruber.

Tillina dissimilis. Sp. n. Plate I., Fig. 10.

Body ovate, subcylindrical, elastic and persistent in shape, twice as long as wide, the anterior half of the ventral surface much compressed and usually corrugate ; body clothed with fine vibratile cilia and longitudinally striate ; oral aperture located in the center of the ventral surface and continued as a distinctly ciliated pharynx, which is curved strongly in the direction of the anterior extremity ; contractile vesicle immediately behind the oral aperture and developing four small vacuoles at each contraction ; nucleus not observed ; endoplasm transparent and granular ; reproduction by transverse fission.

Length, 1-375-inch ; habitat, hay infusion.

The anterior flexure of the pharynx and the behavior of the contractile vesicle individualises this form.

FAMILY OPHRYOGLLENIDÆ, Kent.

GENUS OPHRYOGLENA, Ehrenberg.

Op hryoglena vorax. Sp. n. Plate I., Fig. 11.

Body obovate, compressed, elastic and persistent in shape, more than twice as long as wide ; body clothed with fine vibratile cilia and longitudinally striate ; the oral aperture, bearing a distinct vibrating membrane, is elliptical in shape, parallel with the long axis of the body and located in the anterior body-fourth, a little to the left of the median line ; a pharyngeal passage continuing backwards in a straight line

and for some distance ; contractile vesicle round, large, and very near the center of the sinistral border ; nucleus ovate, very large, granular and obliquely placed subcentrally ; anal aperture in posterior third of the ventral surface ; endoplasm transparent, granular and usually containing an abundance of diatoms and algæ ; no eye-like pigment spot ; reproduction by transverse fission ; movements slow and equable.

Length, 1-100- to 1-60-inch ; habitat, pond water with algæ.

This mammoth form is exceedingly voracious as its name indicates. The writer has many times seen its body crowded with diatoms and algæ, filamentous and single-celled ; on one occasion he counted six diatoms, a large closterium and many smaller desmids.

FAMILY PLEURONEMIDÆ, Kent.

GENUS CYCLIDIUM, Ehrenberg.

Cyclidium centralis. Sp. n. Plate I., Fig. 12.

Body elliptical from a dorsal view, and subovate from a lateral view, about two and a half times as long as wide, subcylindrical, the anterior half of the ventral surface compressed ; body clothed with rigid hair-like setæ, not quite as long the body width, and in even longitudinal rows, giving it a striated appearance ; a single long seta projecting from the posterior border ; oral aperture located a little in advance of the center of the ventral surface and supplemented by a very capacious extensile membrane ; contractile vesicle centrally placed, immediately behind the oral aperture ; nucleus obscure, seemingly round and well up in the anterior body-half ; endoplasm transparent and granular ; movements as with *Cyclidium glaucoma*, Ehrenberg, but slower and more deliberate ; reproduction by transverse fission.

Length, 1-550-inch ; habitat, pond water.

In a majority of specimens treated with a 5 per cent. solution of acetic acid, a nuclear-looking body was detected

well up in the anterior extremity, but as this was not constant, the writer feels justified in writing "Nucleus obscure." The large size of the infusorian and central position of the contractile vesicle are diagnostic of this species. In its habits it is not social as the *Cyclidium glaucoma*, nor has it the frisky movements of this same species.

FAMILY BURSARIADÆ, Stien.

GENUS METOPUS, Clap. and Lach.

Metopus spiralis. Sp. n. Plate I., Fig. 13.

Body subreniform, much compressed, not twice as long as wide, soft and elastic, but persistent in shape, both extremities rounded; a spiral bevel—which divides the zooid into two unequal portions, the posterior of which is still more compressed, narrower and thumb-like—originates at about the posterior limit of the anterior body-third, on one lateral border, continuing obliquely to about the posterior limit of the central body-third on the opposite border, and from there to the opposite surface and then obliquely to the posterior limit of the border from which the spiral bevel originated, thus making a complete circle of the body; the superior edge of this spiral bevel clothed with cilia much longer than that covering the body, which is entirely covered with fairly long cilia and longitudinally striated; oral aperture located in the spiral bevel, where it curves from one surface to the other; contractile vesicle large, unstable in shape and postero-terminal; nucleus round to ovate, coarsely granular, subcentral and near one lateral border; anal aperture postero-terminal; endoplasm yellowish and containing in the anterior fourth a number of dark granules; reproduction by transverse and longitudinal fission; movements rotary, screw-like.

Length, 1-300-inch; habitat, pond water.

This interesting form has occasioned the writer much trouble to diagnosticate correctly, its spiral-like movements

being very confusing. The position of the oral aperture is unique and was ascertained only after feeding with carmine. Longitudinal fission was at first interpreted as an act of conjugation, but further observation exhibited the complete process, from inception at the posterior border to final separation. At times this form is very abundant.

FAMILY SPIROSTOMIDÆ, Kent.

GENUS CONDYLOSTOMA, Dujardin.

Condylostoma culex. Sp. n. Plate I., Fig. 14.

Body somewhat purse-shaped, about twice as long as wide, soft, elastic and slightly changeable in shape, anterior a bit narrower than the posterior, much compressed and obliquely truncate to dextral border; posterior inflated and evenly rounded; peristome field cleft-like, originating at the truncated border and including the right-hand half, continued obliquely towards the left, meeting the oral aperture at the center of the lower limit of the anterior body-third; the right-hand border of the peristome field bearing through its whole length, a heavy and conspicuous undulating membrane; body covered in even longitudinal rows, with fine vibratile cilia; body and peristomal cilia not diverse; contractile vesicle in posterior body-third; nucleus round and subcentral; endoplasm clear and granular; movements rotary; reproduction by transverse fission.

Length, 1-365-inch; habitat, the gelatinous covering of the eggs of the *Culex mosquito*.

Owing to the absence of the extra large peristomal cilia, which is characteristic of the genus *Condylostoma*, the writer has some doubts as to the position of this form, and has placed it with this genus provisionally. In no instance has the writer found this infusorian outside of the habitat above recorded.

FAMILY HALTERIIDÆ, Clap. and Lach.

GENUS STROMBIDIUM, Clap. and Lach.

Strombidium nasutum. Sp. n. Plate I., Fig. 15.

Body subglobose, slightly longer than wide, the anterior border produced in a rounded snout-like projection; spiral wreath of cilia and oral aperture as in *Halteria grandinella*, Müller; contractile vesicle conspicuous and in anterior body-half; nucleus roundish, coarsely granular, in the same body-half and near the opposite border; movements rotary, fairly rapid and springing short distances at long intervals; reproduction by transverse fission.

Length, 1-500-inch; habitat, pond water.

FAMILY GYROCORIDÆ, Stien.

GENUS UROCENTRUM, Nitzsch.

Urocentrum trichocystus. Sp. n.

Body as *Urocentrum turbo*, Müller, a little longer than wide, the anterior portion the larger; ventral surface, oral aperture, contractile vesicle, nucleus, ciliary girdles, caudal appendage and movements as in *Urocentrum turbo*; trichocysts abundant and conspicuous; cuticle transversely striate under a 1-6 objective; endoplasm bluish-yellow; reproduction by transverse and longitudinal fission.

Length, 1-300-inch; habitat pond and ditch water.

This infusorian is often found in the company of the ubiquitous *Urocentrum turbo*, and can be recognised quite readily by the trichocysts, which hardly require any reagent to demonstrate. On the application of the glycerole of tannin the trichocysts are forcibly ejected from the body in great abundance; the average length of a number measured was 1-600-inch, which is comparatively very large.

FAMILY CHLAMYDODONTIDÆ, Kent.

GENUS CHLAMYDODON, Ehrenberg.

Chlamyodon induratus. Sp. n. Plate I., Fig. 16.

Body plano-convex, much flattened, indurated, twice as long as wide, the dextral border straight, the sinistral border broadly convex; dorsal surface traversed longitudinally by from three to five flattened costæ, the lateral borders finely striate transversely; ventral surface plane and covered with fine vibratile cilia, which project slightly from the borders; oral aperture in anterior body-third, nearer the dextral border and supplemented by a pharyngeal rod-fascicle, lying transversely, the cilia of this region very active; contractile vesicle conspicuous and central; nucleus (?) roundish and just below the contractile vesicle and near the dextral border; movements smooth and equable; endoplasm yellowish and usually containing an abundance of filamentous algæ.

Length, 1-300-inch; habitat, ditch water with algæ.

This infusorian is very voracious and has often been seen filled with filamentous algæ; on several occasions a portion of a long filament was swallowed and a large part was still free, while the infusorian was dashing about as if in search for more. The location of the nucleus is uncertain as in many instances, after applying the usual reagents, this element could not be detected.

FAMILY OXYTRICHIDÆ, Ehrenberg.

GENUS OPISTHOTRICHIA, Kent.

Opisthotrichia elongata. Sp. n. Plate I., Fig. 17.

Body subelliptical, about four times longer than wide, soft and elastic, the anterior wider and tapering gradually to the posterior rounded border; anterior border slightly and obliquely truncate to the dextral border; lip conspicuous; peristome extending obliquely to the oral aperture, which is located in the center of about the posterior limit of the

anterior body-fourth ; the right-hand border of the peristome bearing an undulating membrane ; frontal styles, six, arranged in pairs, the two most superior ones uncinatæ ; ventral styles, five, and scattered ; anal styles, five, the two nearest the dextral border the longest and just reaching the posterior border ; marginal setæ continuous, very much longer and more numerous posteriorly, these setæ on the sinistral side beginning just above and near to the oral aperture and continuing obliquely to the posterior, where they project ; caudal setæ, three, central and lying parallel to each other and to the longitudinal axis of the zooid ; these setæ are no longer than the marginal setæ of the same region ; hispid setæ sparse and inconspicuous ; contractile vesicle subcentral and near the sinistral border ; nuclei two, one in each body-half, to the left of the median line ; movements rapid ; reproduction by transverse fission.

Length, 1-100- to 1-80 inch ; habitat, pond water.

PLATE I.

- Fig. 1.** *Petalomonas involutus*.
Figs. 2, 3 and 4. *Astasia invaginata*.
Fig. 5. *Heteronema lunaris*.
Fig. 6. *Loxocephalus lucidus*.
Fig. 7. *Nassula magna*.
Fig. 8. *Holophrya curvilata*.
Fig. 9. *Urotricha hyalina*.
Fig. 10. *Tillina dissimilis*.
Fig. 11. *Ophryoglena vorax*.
Fig. 12. *Cyclidium centralis*.
Fig. 13. *Metopus spiralis*.
Fig. 14. *Condylostoma culex*, ventral surface.
Fig. 15. *Strombidium nasutum*.
Fig. 16. *Chlamydodon induratus*.
Fig. 17. *Opisthotricha elongata*, ventral surface.

PLATE I.

